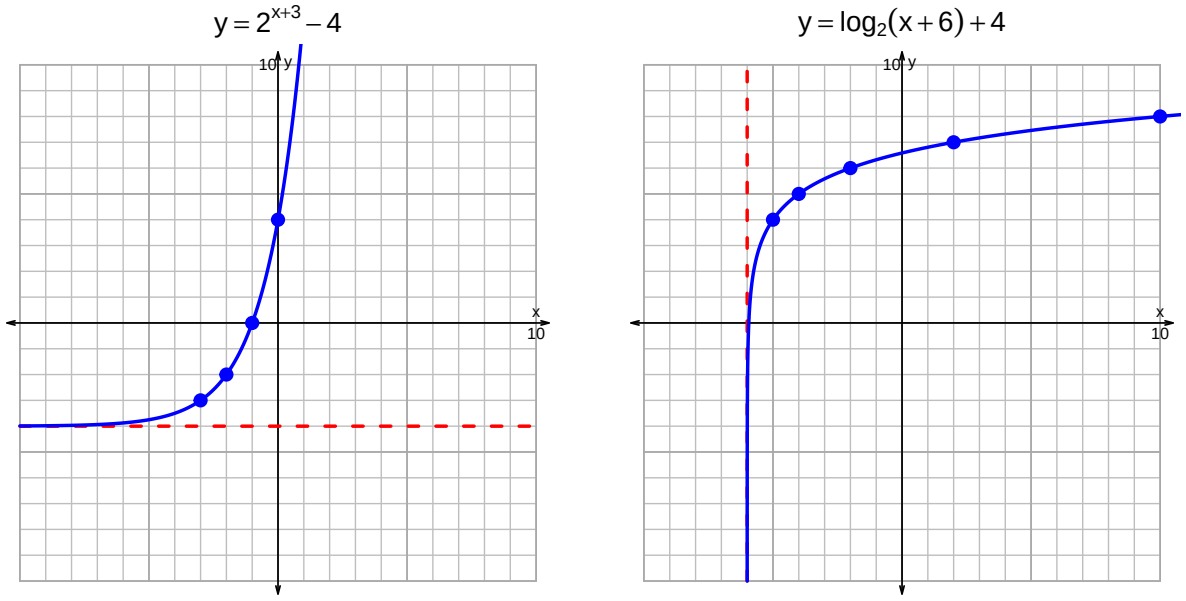
Name: Date:

S18QUIZ: EXP LOG (SLTN v219)

1. Graph $y = 2^{x+3} - 4$ and $y = \log_2(x+6) + 4$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-29 = \left(\frac{-4}{5}\right) \cdot 10^{3t/7}$$

Divide both sides by $\frac{-4}{5}$.

$$\frac{29 \cdot 5}{4} = 10^{3t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{29 \cdot 5}{4}\right) = \frac{3t}{7}$$

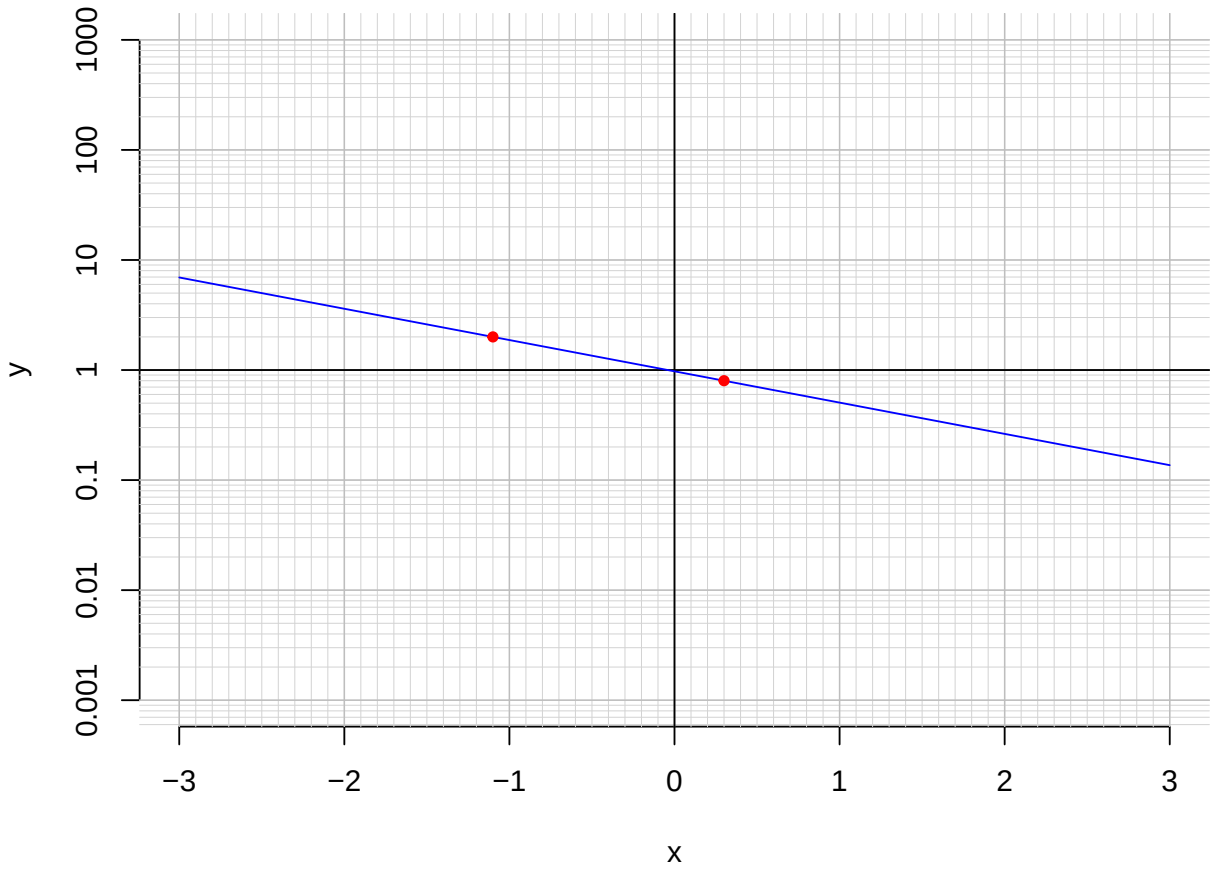
Divide both sides by $\frac{3}{7}$.

$$\frac{7}{3} \cdot \log_{10}\left(\frac{29 \cdot 5}{4}\right) = t$$

Switch sides.

$$t = \frac{7}{3} \cdot \log_{10}\left(\frac{29 \cdot 5}{4}\right)$$

3. An exponential function $f(x) = 0.974 \cdot e^{-0.654x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-1.1)$.

$$f(-1.1) = 2$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{0.654} \cdot \ln\left(\frac{x}{0.974}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.8)$.

$$f^{-1}(0.8) = 0.3$$